



NREL 99-45.ST25
SEQUENCE LISTING

<110> National Renewable Energy Laboratory
<120> Cellobiohydrolase I Gene and Improved Variants
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<140> 10/031,496
<141> 2002-01-14
<160> 120
<170> PatentIn version 3.2
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 Cys Ser Val Gly Leu His Ser Pro Ile Gly Asp Ser Pro Ala Ser Asp
 20 25 30

atg gca gaa atg ctc gtc tgg tgg cac gtg cac tca aca gac agg ctc 143
 Met Ala Glu Met Leu Val Trp Trp His Val His Ser Thr Asp Arg Leu
 35 40 45

cgt ggt cat cga cgc caa ctg gcg ctg gac tca cgc tac gaa cag cag 191
 Arg Gly His Arg Arg Gln Leu Ala Leu Asp Ser Arg Tyr Glu Gln Gln
 50 55 60

cac gaa ctg cta cga tgg caa cac ttg gag ctc gac cct atg tcc tga 239
 His Glu Leu Leu Arg Trp Gln His Leu Glu Leu Asp Pro Met Ser
 65 70 75

caa cga gac ctg cgc gaa gaa ctg ctg tct gga cgg tgc cgc cta cgc 287
 Gln Arg Asp Leu Arg Glu Glu Leu Leu Ser Gly Arg Cys Arg Leu Arg
 80 85 90

gtc cac gta cgg agt tac cac gag cgg taa cag cct ctc cat tgg ctt 335
 Val His Val Arg Ser Tyr His Glu Arg Gln Pro Leu His Trp Leu
 95 100 105

tgt cac cca gtc tgc gca gaa gaa cgt tgg cgc tcg cct tta cct tat 383
 Cys His Pro Val Cys Ala Glu Glu Arg Trp Arg Ser Pro Leu Pro Tyr
 110 115 120 125

ggc gag cga cac gac cta cca gga att cac cct gct tgg caa cga gtt 431
 Gly Glu Arg His Asp Leu Pro Gly Ile His Pro Ala Trp Gln Arg Val
 130 135 140

ctc ttt cga tgt tga tgt ttc gca gct gcc gtg cgg ctt gaa cgg agc 479
 Leu Phe Arg Cys Cys Phe Ala Ala Val Arg Leu Glu Arg Ser
 145 150 155

tct cta ctt cgt gtc cat gga cgc gga tgg tgg cgt gag caa gta tcc 527
 Ser Leu Leu Arg Val His Gly Arg Gly Trp Trp Arg Glu Gln Val Ser
 160 165 170

cac caa cac cgc tgg cgc caa gta cgg cac ggg gta ctg tga cag cca 575
 His Gln His Arg Trp Arg Gln Val Arg His Gly Val Leu Gln Pro
 175 180 185

gtg tcc ccg cga tct gaa gtt cat caa tgg cca ggc caa cgt tga ggg 623
 Val Ser Pro Arg Ser Glu Val His Gln Trp Pro Gly Gln Arg Gly
 190 195 200

ctg gga gcc gtc atc caa caa cgc gaa cac ggg cat tgg agg aca cgg 671
 Leu Gly Ala Val Ile Gln Gln Arg Glu His Gly His Trp Arg Thr Arg
 205 210 215

aag ctg ctg ctc tga gat gga tat ctg gga ggc caa ctc cat ctc cga 719
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Lys	Leu	Leu	Leu		Asp	Gly	Tyr	Leu	Gly	Gly	Gln	Leu	His	Leu	Arg	
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Gly	Ser	Tyr	Pro	Pro	Pro	Leu	His	Asp	Cys	Arg	Pro	Gly	Asp	Leu	Arg	
	235					240					245					
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Gly		Trp	Val	Arg	Arg	Asn	Leu	Leu	Arg		Gln	Ile	Trp	Arg	His	
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ttg	cga	tcc	cga	tgg	ctg	cga	ctg	gaa	ccc	ata	ccg	cct	ggg	caa	cac	863
Leu	Arg	Ser	Arg	Trp	Leu	Arg	Leu	Glu	Pro	Ile	Pro	Pro	Gly	Gln	His	
	265					270					275					
cag	ctt	cta	cgg	ccc	tgg	ctc	aag	ctt	tac	cct	cga	tac	cac	caa	gaa	911
Gln	Leu	Leu	Arg	Pro	Trp	Leu	Lys	Leu	Tyr	Pro	Arg	Tyr	His	Gln	Glu	
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Ile	Asp	Arg	Cys	His	Pro	Val	Arg	Asp	Val	Gly	Cys	His	Gln	Pro	Ile	
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Leu	Cys	Pro	Glu	Trp	Arg	His	Phe	Pro	Ala	Ala	Gln	Arg	Arg	Ala	Trp	
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Gly	Arg	Ile	Arg	Arg	Ile	Leu	Phe	Leu	Arg	Gln	Gly	Arg	Pro	Asp	Ser	
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Gly		Leu	Leu	Arg	Gln	His	Ala	Val	Ala	Gly	Leu	His	Leu	Pro	Asp	
			375					380					385			
aaa	cga	gac	ctc	ctc	cac	acc	cgg	tgc	cgt	gcg	cgg	aag	ctg	ctc	cac	1247
Lys	Arg	Asp	Leu	Leu	His	Thr	Arg	Cys	Arg	Ala	Arg	Lys	Leu	Leu	His	
		390					395					400				
cag	ctc	cgg	tgt	ccc	tgc	tca	ggc	cga	atc	tca	gtc	tcc	caa	cgc	caa	1295
Gln	Leu	Arg	Cys	Pro	Cys	Ser	Gly	Arg	Ile	Ser	Val	Ser	Gln	Arg	Gln	
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ggc	cac	ctt	ctc	caa	cat	caa	gtt	cgg	acc	cat	tgg	cag	cac	cgg	caa	1343
Gly	His	Leu	Leu	Gln	His	Gln	Val	Arg	Thr	His	Trp	Gln	His	Arg	Gln	
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ccc	tag	cgg	cgg	caa	ccc	tcc	cgg	cgg	aaa	ccc	gcc	tgg	cac	cac	cac	1391
Pro		Arg	Arg	Gln	Pro	Ser	Arg	Arg	Lys	Pro	Ala	Trp	His	His	His	
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cac	ccg	ccg	ccc	agc	cac	tac	cac	tgg	aag	ctc	tcc	cgg	acc	tac	cca	1439
His	Pro	Pro	Pro	Ser	His	Tyr	His	Trp	Lys	Leu	Ser	Arg	Thr	Tyr	Pro	
				455					460					465		

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gtc tca cta cgg cca gtg cgg cgg tat tgg cta cag cgg ccc cac ggt 1487
Val Ser Leu Arg Pro Val Arg Arg Tyr Trp Leu Gln Arg Pro His Gly
470 475 480

ctg cgc cag cgg cac aac ttg cca ggt cct gmc cct tac tac tct cag 1535
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Ala Glu Met Leu Val Trp Trp His Val His Ser Thr Asp Arg Leu Arg
35 40 45

Gly His Arg Arg Gln Leu Ala Leu Asp Ser Arg Tyr Glu Gln Gln His
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Glu Leu Leu Arg Trp Gln His Leu Glu Leu Asp Pro Met Ser
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10

15

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Arg Gln Val Arg His Gly Val Leu
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20 25 30

Arg Tyr His Gln Glu Ile Asp Arg Cys His Pro Val Arg Asp Val Gly
35 40 45

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Gln Arg Arg Ala Trp
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Asp Leu Leu His Thr Arg Cys Arg Ala Arg Lys Leu Leu His Gln Leu
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NREL 99-45.ST25

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Gln Arg His Asn Leu Pro Gly Pro Xaa Pro Tyr Tyr Ser Gln Cys Leu
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20 25 30

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35 40 45

His Gly Arg Arg Gln Leu Ala Leu Asp Ser Arg Tyr Glu Gln Gln His
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NREL 99-45.ST25

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Arg Lys Leu Leu Leu
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Page 9

1 5 15

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Arg Tyr His Gln Glu Ile Asp Arg Cys His Pro Val Arg Asp Val Gly
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Cys His Gln Pro Ile Leu Cys Pro Glu Trp Arg His Phe Pro Ala Ala
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Gln Arg Arg Ala Trp
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20 25 30

Val Gly

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Asp Leu Leu His Thr Arg Cys Arg Ala Arg Lys Leu Leu His Gln Leu
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Leu Arg Pro Val Arg Arg Tyr Trp Leu Gln Arg Pro His Gly Leu Arg
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NREL 99-45.ST25

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NREL 99-45.ST25

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